DOMESTIC SUMMARY.

Experiments with Ligatures.—Dr. B. HOWARD exhibited to the New York Pathological Society (Oct. 23, 1867), three specimens of ligature of the carotid arteries in the sheep, by different ligatures and in different manners, and made, in connection therewith, the following remarks:—

A patient came to me with an axillary aneurism, and as immediate compression was, under the circumstances, impracticable, I thought of no other method of treatment save that of ligation of the subclavian. The condition of the artery, I apprehended, would not allow of ligation in the ordinary manner, by the silk ligature, and I thought if ligation were to be performed at all, it must be by the metallic ligature. We know that it is as generally accepted as taught, that the metallic ligature takes up its residence quietly wherever it is placed. Before proceeding, however, to perform such an operation, I thought it would be better to confirm these teachings first by experiment.

I accordingly obtained a very strong sheep, and applied a silver-wire ligature to the common carotid, and fastened it by twisting it very tightly. Fifty-six days afterwards, I cut down through the cicatrix, and found that the collateral circulation which was established was very complete, and that the capillary circulation was not great; so that by making the section—which was, by the by, a vivisection—there was very little hemorrhage. On coming down to the point of ligation, I was very much astonished to find what appeared to be a good-sized aneurism. I concluded, although I could detect no pulsation, that it was a dissecting aneurism; the ligature having perhaps caused ulceration of the middle and internal coats of the vessel. I removed it, and on section I was rather surprised to find what you here see—that this sac was an abscess full of inspissated pus, the pus having been in larger quantity than when I removed the tumour, as is manifested by the plications of the pyogenic membrane. It occupied a space of about four lines on either side of ligature, beyond which points the plugs were intact for about seven lines. In the centre of this abscess lay this ligature, with the middle and lining coats of the artery completely sloughed away and detached.

Here is another specimen removed from a pretty strong sheep. I applied a leaden ligature this time, and had it rather large, in order to avoid its cutting through. I tied it tightly, and, apprehensive that the sharp twisted ends might possibly produce some mechanical irritation, I sought to avoid it by securing the ends with perforated shot, they then being cut off smoothly. Twenty-six days afterwards, I cut down through the cicatrix, when instantly a pellet of pus appeared in the incision, as if propelled from behind. I made another incision, when the ligature and shot immediately followed it. As I proceeded towards the original site of the ligation, the hemorrhage was exceedingly great—almost equal to that produced by dissecting through erectile tissue. I ligated above and below, and then removed this portion with the abscess which I present. There had been a good deal of inflammation around the artery, and there was considerable fibrinous material effused in the neighbourhood. When preparing this specimen, I came to a point which I thought was no part of the tumour, but was misled; for, by continued clipping with scissors, I came down to a part which was exceedingly dense, and, cutting that, a little opening was revealed, through which a piece of whalebone has been passed, and through which the ligature had ulcerated its way to the surface. On making a longitudinal section of this artery, I found it perfectly occluded, and well plugged on its cardiac and distal aspect. Between the proximal end of the distal plug and the distal end of the cardiac plug, was apparently an abscess containing about a drachm and a half of sero-purulent fluid; otherwise, the clot was perfect. The points of interest in this specimen are the great amount of irritation and inflammatory action that occurred about this metallic ligature, and that through the consequent excessive deposit of fibrin, the ligature, shot and all, had worked its way, arriving nearly at the cicatrix of the ligament.

I imagined that perhaps the kind of ligature was not the only consideration which should claim attention, and I obtained another sheep, to the common carotid of which I applied a silver-wire ligature, tying it incompletely after the manner of the silk ligature; but I was very careful to tie it loosely. I tied it tight enough only to diminish the canal of the artery to a considerable degree, but avoided, as nearly as I could judge, a complete closure.

On cutting down afterwards upon the cicatrix, I could scarcely discover whereabouts the ligature had been applied, so small was the amount of irritation it had produced. The plug in this case was more perfect than in either of the preceding cases. There was no abscess, the fibrinous deposit being just sufficient to cover the ligature. There was, on making the section, just a drop of something in which my friend Dr. Rogers, who has examined several specimens for me, thought he found one or two globules of a doubtful nature. At all events, the inflammatory action was exceedingly slight, only enough to be serviceable. The result, so far as occlusion, extent, and firmness of the plug are concerned, is very much better than in either of the other cases.

I am very unwilling, at present, to make any deductions from these experiments. They form only a small part of a series which I have in progress, each with a different ligature applied in a different manner. So far as these experiments go, other things being equal, it seems to be demonstrated, 1st, *that the metallic ligature does not always reside quietly where it is placed.* The last experiment demonstrates, 2d, *that it is not always necessary for complete occlusion of the artery to tie the ligature so tigthly as to divide the middle and internal coats.* 3d. The last experiment is very suggestive, that a silver-wire ligature applied so loosely as to produce no lesion of the artery, nor even to completely arrest the circulation, may suffice for the cure of aneurism, when an ordinary ligature would be rendered inexpedient by the condition of the arterial coats.—*Medical Record*, Dec. 2, 1867.

Observations and Experiments on Living Organisms in Heated Water.—Dr. Jeffries Wyman gave, in the *Am. Journ. of Science and Arts* for July, 1862, an account of some very interesting experiments on the formation of infusoria in boiled solutions of organic matter, which showed that such solutions, exposed only to air which had passed through tubes heated to a redness, became the seat of infusorial life. (See No. of this Journal for October, 1862, p. 567.)

This same eminent physiologist and most reliable observer has been further pursuing his investigations, and has published an account of them in our esteemed contemporary, the *American Journal of Science and Arts* for September last.

Dr. W. remarks: "Abundant proof has been brought forward to show that the spores or germs of infusoria exist in the air in quantities amply sufficient to account for the presence of living organisms in solutions freely exposed.

"There can therefore be no certainty of the existence of spontaneous generation in a given solution, until it can be shown that this has been freed of all living organisms which it contained at the beginning of the experiment, and kept free of all such from without during the progress of it. On the other hand, this kind of generation becomes probable, whenever it is made certain that infusoria do appear in solutions, in which the conditions just mentioned have been complied with. We say probable, because their appearance under such circumstances would not amount to a proof. The absolute proof of spontaneous generation must come from the formation of living organisms out of *inorganic* matter. If infusoria are generated in solutions of organic matter, independently of spores or germs, the question may be fairly raised whether we do not begin the experiment with materials in which life already exists, even though this material is not in the form of distinct organisms.

"The issue between the advocates and the opponents of this doctrine clearly turns on the extent to which it can be proved that living beings resist the action of water at a high temperature, or on what Pouchet calls 'vital resistance,' for in nearly all the observations hitherto made, heated water has been the agent for the destruction of infusorial life preliminary to the beginning of an experiment.

"The observations and experiments contained in this communication have